The MAC Flyer

JUNE 1978

Special Anniversary Issue

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MILITARY AIRLIFT COMMAND

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The MAC Flyer

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For Greater Safety and Efficiency in MAC Air Operations

JUNE 1978 MACRP 127-5 VOL XXV, NO. 6

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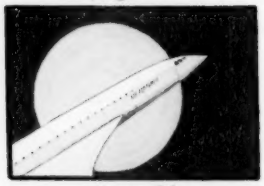

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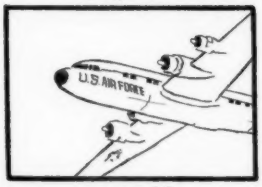

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The MAC Flyer is published by the Directorate of Safety, Headquarters Military Airlift Command. The contents are informative and not regulatory or directive. All names in accident stories are fictitious and no information concerning aircraft accidents may be construed as incriminating under Article 31, UCMJ.

Contributions, comments and criticisms are welcome. Write: The Editor, *The MAC Flyer*, HQ MAC/IGFE, Scott AFB, IL 62225, or call: (618) 256-3534 or Autovon 638-3534. The editor reserves the right to change manuscripts to improve them or correct technical errors.

MAC units establish requirements for the magazine through their publications distributor (DAPD).

Private subscriptions are available from: The Superintendent of Documents, Government Printing Office, Washington, DC 20402. Price: $1.00 per copy, $12.00 per year (foreign addresses: $1.30 per copy, $15.00 per year). Changes in address for subscription mailings should be sent to the above address. Give old and new addresses, including both zip codes.

Distribution: F, X; OPR: HQ MAC/IGFE.

Flyer Call

Blue and Gold. 1 June 1978 is the 30th Anniversary of MAC. And 1978 isn't half over, but it's already memorable. The Secretary of the Air Force Safety Award — the Mackay Trophy — these are indications of the talent and professionalism we've got in the command.

Seems like it's tradition that when we reach a milestone, we reminisce about the past—and think about the future. That's what we've done in this special issue. For the past month, *TMF's* staff has pored over volumes, letters, and pictures from our past in an effort to "tell it like it was." We got a lot of help from readers both in and outside the command; to you contributors, thanks.

Picking the title "Roots" for the article on the formative years of airlift seems appropriate. "Evolution" will carry you from 1948 to the present and "2008" is a glimpse (hopefully) into our future. Other features were picked to fit in with the nostalgia theme—including the eye-watering painting of an old "Jiminy Cricket" A-model C-130 in the centerfold.

One thing we've learned from this exercise is that airlift has always had the pro's on board. Seldom recognized, seldom decorated, but always in the thick of it—delivering combat-essential supplies and rescuing the downed.

Happy anniversary!

The First 30 Years

The MAC Story might properly begin on the third of February 1948, when Secretary James V. Forrestal of the new Department of Defense announced that he would form the first integrated command by merging the Navy's NATS (Naval Air Transport Service) with the Air Force's ATC (Air Transport Command) and that I would command the new organization.

This "shotgun wedding" attracted much public attention. My wife and I assembled much of the media material which, with other papers, were presented to the Air Force Academy Library in 1962. These include references to the Berlin Airlift, public credit for which was claimed by several Army and Air Force commanders in Europe while MATS, unsung, carried the load. The Korean airlift is discussed at length as well as many spectacular operations performed by the Air Rescue Service. Less spectacular, but difficult and sometimes dangerous, were the operations of the Communications Service in the Arctic and the Weather Service in hurricanes, typhoons, and global forecasting. MATS also was charged with worldwide and remote mapping and charting operations.

In your effort to produce a suitable 30th anniversary issue of *The MAC Flyer*, you have my best wishes.

Laurence S. Kuter

LAURENCE S. KUTER,
General, USAF (Ret)

Thirty years ago, a newly formed Military Airlift Transport Service was thrust into the breach of "Operation Vittles"—in Berlin. Airlift responded with guts and tenacity. MATS aircrews, maintenance men, weather people, and communicators crushed the Communist blockade of the free-island city *peacefully*—a fitting first trial, but only the beginning of many airlift episodes.

Airlift forces have been involved in peace and war continually since then. Korea — 1950, Suez — 1955, Lebanon — 1958, Congo — 1960, thirteen years in Southeast Asia, and Israel in 1973. Viewed in this light, airlifters have contributed to the peacekeeping character of the United States like no other command in the Air Force.

Our legacy is a sweep of low-key heroics—of crews and maintainers keeping 'em flying by working to the level of human endurance—of stark and daring rescues—of hurricane hunters—of humanitarian efforts stretching around the globe.

Bravery with compassion—you're the best band of warriors a commander could hope to have. I salute you on our 30th anniversary.

William G. Moore, Jr.

WILLIAM G. MOORE, JR.
General, USAF
Commander in Chief

Roots:
Where Airlift Began

by Capt James P. Coe
Associate Editor

MAC is 30 years old, but airlift is a lot older.

If we could trace a genealogy from the 1st Air Transport Group back in '32 through the 50th Air Transport Wing, established in 1941, and on to the Military Airlift Command, then our history would be simple—and boring. But it didn't work that way. U.S. airlines, Air Corps Ferrying Command, Naval Air Transport Service, and Troop Carrier Command all contributed to the evolution of airlift. Our *roots*.

When Hitler ordered his Panzers to roll into Poland, the U.S. airline industry had the only fleet of highly developed and proven cargo aircraft in the country. But soon the aircraft industry turned its assembly lines toward production of aircraft for our future allies. At first the planes were delivered by civilian pilots, but in 1941 the Army established the Air Corps Ferrying Command to deliver these aircraft. When Colonel Robert Olds took over the new command on 29 May 1941, his instructions from Lieutenant General H. H. Arnold, Air Corps Commander, were broad: Ferry aircraft from the factories to the terminals and provide other services as required. The second part of that mission was the airlift of people and supplies. Before the end of 1941 the Ferrying Command was operating regular routes across the North Atlantic, the Pacific, and through South America to Africa and the Middle East. These ever-expanding routes required the development of weather and communications facilities and led to a close association between the organizations which supplied these services and the air transport organization which was their biggest customer.

With America's entry into World War II at hand, the armed services began to expand and reorganize. The Air Service Command was created in October 1941 to handle supply, maintenance, and contract airlift for the Army Air Force. The Naval Air Transport Service started in December 1941 to cover the Navy's long-range transport needs.

Wartime Development

The attack on Pearl Harbor wrought great changes in civilian and military aviation. The resources of America's airlines were placed at the immediate disposal of the armed forces through plans developed by the Air Transport Association during the 1930's. Many of the airlines' aircrewmembers, mechanics, and managers were inducted into the service; many others trained Army aviators and flew the civil air routes. The airlines also gave over half of their aircraft to the armed services.

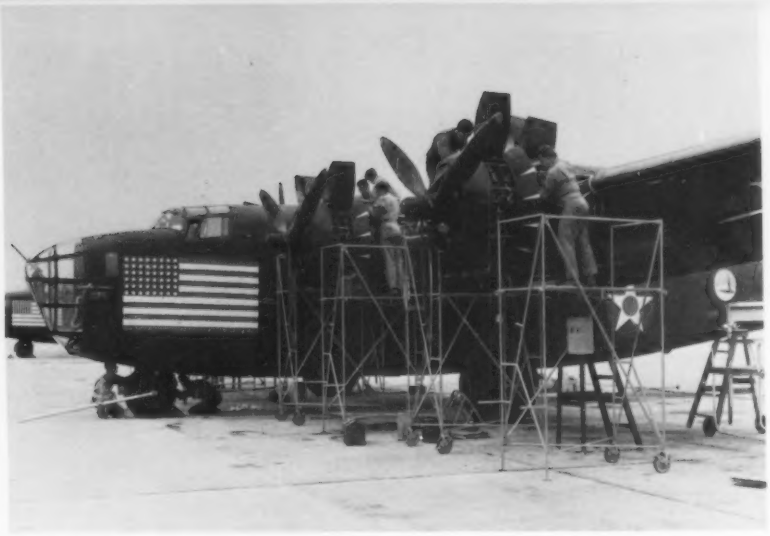
The airlift mission grew rapidly after Pearl Harbor and Ferrying Command was renamed Air Transport Command (ATC) on 20 June 1942. Its charter included

aircraft ferrying, air transport (except troop carrier), maintenance of air routes and facilities, control of domestic contract airlift, and aeromedical evacuation. The assigned equipment to start this airlift business was pretty meager: eleven converted B-24's (C-87's), seven Boeing Clippers and Martin Flying Boats bought from Pan American, and five Boeing Stratoliners (C-75's) purchased from TWA. ATC was organized into the Ferrying Division and the Air Transport Division with five wings named for geographic areas of responsibility.

Airlift followed the Allied advance throughout the war. Air supply was close behind the Armies as they won victories in North Africa and Italy. Thousands of airlift missions supported the invasion at Normandy and the offensive into the German homeland. In the Pacific, the air line-of-supply followed the island-hopping advance of American forces and fought to keep China in the war with airlift over the Himalayas. ATC's Ferrying Division delivered over 50,000 aircraft to overseas destinations and made about 230,000 domestic deliveries. By the war's end, ATC and its contract carriers had airlifted 2,702,861,000 ton-miles of cargo and mail worldwide. Passenger operations reached more than 5 billion passenger miles in 1945; air evacuation passengers numbered 86,407 in 1945 alone.

The *concept* embodied in Air Transport Command was as important as its statistical accomplishments. In 1941, General Arnold gave specific directions to his theater commanders not to interfere with ATC's operations because it was a War Department agency—strategic airlift was born.

The difference between Air Transport Command and Troop Carrier Command (TCC) was often difficult to define during World War II. Both commands were equipped with similar aircraft (C-47's and C-54's). The real distinction was in the handling of administrative, logistic, or intra-theater airlift. ATC, centrally controlled, emphasized long-haul airlift; troop carrier, controlled by individual theater commanders, concentrated on short-haul missions. ATC proved its value in giant airlift tasks like the India-China operation and the return of our forces from Europe and the Pacific. TCC proved its capabilities in the airborne assaults and resupply missions that often made the difference between victory and defeat. This separation of airlift forces by mission would endure for nearly three decades.



Ferrying Command mechanics prepare a B-24A for the long trip to Europe.

Feminine Flyers

Jacqueline Cochran was assigned to the staff of Ferrying Command in 1941 to make recommendations concerning the use of women as pilots. The shortage of male pilots was a real problem and the Army turned to women for some of the domestic ferrying duty. Eventually the women flew a wide variety of missions ranging from primary flight instruction for Flying Training Command to the ferrying of large bombers. By July 1944, the Women Air Service Pilots (WASP) in Ferrying Division had completed 12,650 ferry missions and covered over 60 million miles in the service of the United States.

The Hump

One historian notes, "Together with Hannibal's crossing of the Alps, the Hump operation will go down in the annals of military history as one of the most difficult logistics missions accomplished by any military force." The air supply of China kept that country in the war, not as a major combatant, but as territory denied to the enemy and a possible jumping-off point for Allied invasion of the Japanese homeland. ATC took over the supply of China in 1942 with the establishment of the India-China Wing (ICW); the unit carried supplies over uncharted parts of the Himalayas where the mountain *passes* reached 14,000 feet and were guarded by peaks above 16,500 feet. This was the Hump.

Aircrews flew the Hump in C-46's and C-47's. In February 1943, the ICW delivered 2,800 tons of supplies. The addition of C-54's beefed up the lift and by

The C-74 Globemaster I was a giant in its day.

July 1945, deliveries reached 71,000 tons. Carter's history of airpower in World War II tells the real significance of the Hump operation: "Most important in the long run . . . the Air Transport Command's crowded airways to China were the proving ground, if not the birthplace, of strategic airlift. The India-China experience made it possible to conceive the Berlin Airlift . . . ."

Airborne!

The first airborne assault of World War II was part of Operation Torch. On 8 November 1942, 39 C-47's from the 60th Troop Carrier Group took off to deliver about 1,000 airborne troops into North Africa. Weather and enemy fighter attacks broke up the transport formations and hampered navigation; the troops were delivered far from their original drop zones. However, the airborne forces learned from their mistakes and played important roles in every major Allied advance throughout the war. The accomplishments of the last airborne operation of World War II are noteworthy. As part of Operation Varsity, the attack across the Rhine, the IX Troop Carrier Command used 226 C-47's and 72 C-46's to deliver, by parachute and glider, 17,000 men and their equipment into a 25-square-mile area in four hours.

NATS

Naval Air Transport Service (NATS) was the first regularly scheduled airlift operation to the fleet and provided critical airlift of supplies and personnel. By 1944 NATS' scheduled service covered over 65,000 miles of air routes. Using a balance of land and seaplanes, NATS airlifted about 41,500 tons of cargo each month during 1944. In many ways NATS was to the Navy what ATC was to the Army, but there were differences: NATS neither had a theater command like the India-China Division nor owned a big air base.

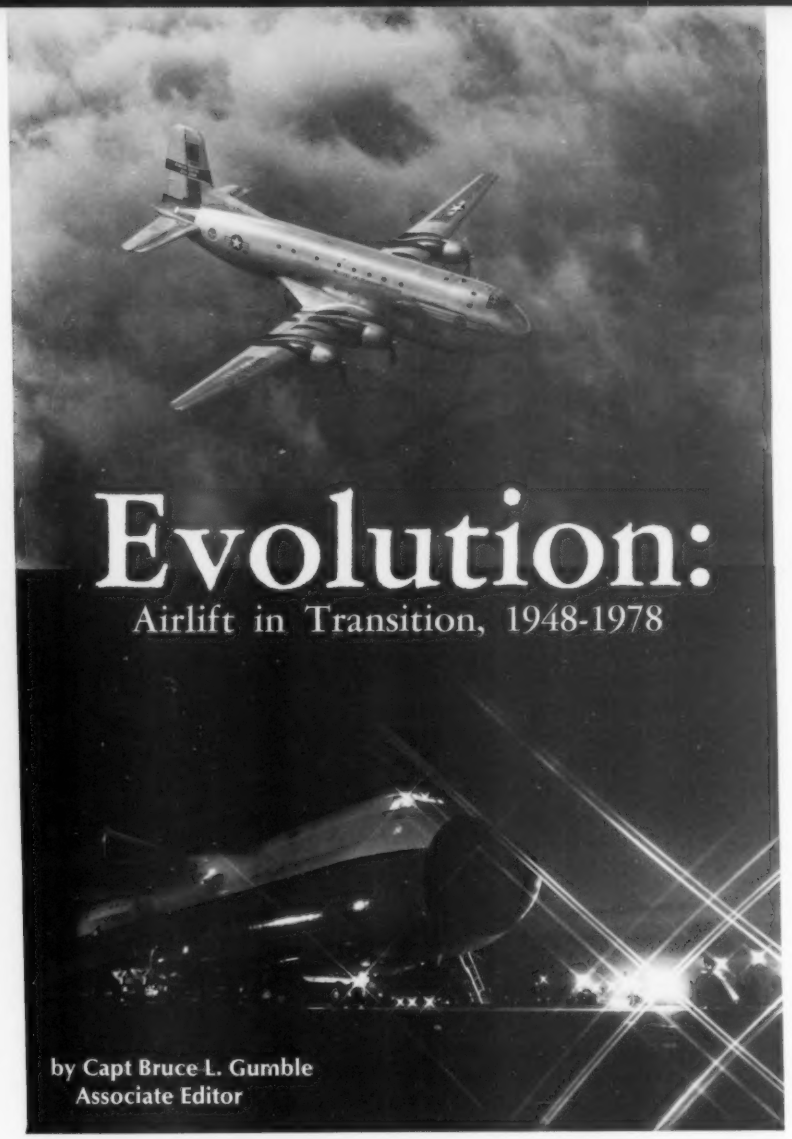
MATS

The strength and mission of ATC decreased rapidly after America demobilized following World War II. Its postwar duties were to maintain routes and bases in support of our armies of occoupation and keep the overseas airways open for military use and commercial development. In March 1946, ATC acquired the Airways and Communication Service, Air Rescue Service, Flight Service, Aeronautical Charting, and Flight Safety. Counting these technical services, ATC's total strength was 42,090 military and 17,590 civilians; this was less than one-fourth of the people assigned at the end of 1945.

When the United States Air Force was born on 18 September 1947, ATC was one of the original major air commands. The IX Troop Carrier Command was absorbed by Tactical Air Command in 1946 and became parts of the 9th and 13th Air Forces. However, a major selling point for the National Security Act of 1947 was cooperation between the armed services. The Military Air Transport Service was a major step in this direction. In January 1948, Secretary of Defense James F. Forrestal initiated the formation of an armed forces air transport service and selected Major General Laurence S. Kuter to head the organization.

MATS acquired all of the ATC's missions, services, facilities, and people. Also MATS welcomed aboard 446 officers and 2,372 enlisted men in four air transport squadrons of the United States Navy. As an interservice command, MATS' first vice commander was Rear Admiral John P. Whitney.

The early history of airlift reflects the advancing idea of the time: independent air power. The first big strategic airlifts proved it was practical to supply military forces by air. The troop carriers developed tactics for airborne operations and intratheater airlift during World War II that are the basis for today's doctrine. The concept of airlift as a strategic weapon started with Air Transport Command and culminated with the birth of the first joint-service air command, Military Air Transport Service.



Evolution:

Airlift in Transition, 1948-1978

by Capt Bruce L. Gumble
Associate Editor

"Victory is the beautiful, bright-colored flower. Transport is the stem without which it could never have blossomed."
—Winston Churchill

It was only 30 years ago—barely the tick of a clock on the scale of human history, less than half a lifetime. But a look through the telescope of history at the newborn Military Air Transport Service reveals the incredible amount of change in those few years. The differences between MATS of 1948 and MAC of today are so pronounced that they almost obscure the similarities; but the similarities are there, and they're fundamental. Since 1948, our mission has grown and developed rather than changed. It's the speed of development that's startling—evolution at the pace of revolution.

We've accomplished a lot since that June day when the Navy's NATS and AF's ATC got together and MATS became the newest acronym in the Air Force. But pride in accomplishment and celebration of an anniversary aren't the only reason for looking back over the command's past. One of the best ways to determine where you are is to look at where you've been—and just possibly, that contrail stretching into the past may also point the way toward the future.

The First Challenge

In the last week of June 1948, the internal organization process was still underway at MATS headquarters. But the new command wasn't allowed time to get on its feet before it faced the first great challenge of the Cold War: the Soviet blockade of Berlin. For the city and its people to survive the shutoff of supplies, there was only one possibility short of war: airlift.

The Berlin Airlift — Operation Vittles — began with C-47's from USAFE's troop carrier organizations, but it soon became obvious that more and bigger aircraft would have to do the job—and that meant the C-54's and Navy R5D's belonging to MATS. Aircraft and crews stripped from normal MATS routes assembled in West Germany to form a Combined Airlift Task Force (CALTF) commanded by Maj Gen William H. Tunner, MATS airlift expert. The task facing the CALTF seemed almost insuperable—to fly an enormous tonnage of supplies down narrow air corridors, using minimal navigational aids, through

some of the worst flying weather in the world. But the MATS crews, together with weather and communications personnel from the technical services, went to work with a will. Eleven months later, they had succeeded; the blockade was lifted.

Operation Vittles taught us quite a few lessons. Two of them pointed directly to the future; the fact that a massive, all-weather airlift was not only possible, but would be a major factor in any future conflict; and the realization that bigger, faster aircraft were vital to future airlift needs. But the crisis that really drove home these lessons was still a year and half a world away.

Lifeline to Korea

While the Berlin Airlift went on, MATS worked to maintain its network of global routes. MATS headquarters moved to Andrews AFB in late 1948—a base which was not commanded by MATS, but by the 4th Fighter Wing, Strategic Air Command. In fact, most of the command's bases were overseas; in the CONUS, MATS owned only Westover, Great Falls, and Fairfield-Suisun AFBs (Fairfield-Suisun was transferred to SAC in 1949; it was to rejoin MATS later after being renamed Travis). But MATS units kept the worldwide route structure in operation — a system which would be needed badly, and soon.

When the Berlin Airlift ended, the command's state of readiness left a great deal to be desired. Operation Vittles had been hard on both aircraft and crews; the C-54's, mainstay of MATS, needed extensive reconditioning to get them ready for normal use. Budget restrictions forced a cut in flying hours and curtailed aircrew currency; the experience level dropped as seasoned reserve officers left the service and were replaced by flying school graduates. Then, in June 1950, MATS lost a C-54 — destroyed by Yak fighters in the first air attack of the Korean conflict. Ready or not, MATS had to go to war.

Workhorse of the fleet in the early days of MATS: the Douglas C-54.

The airlift to Korea was very different from the effort in Berlin. The problem now was not massive tonnage, but distance; the shortest route from the West Coast to the combat zone required 30 hours of flying time, while the most practical route through the mid-Pacific took 34 hours. With only enough crews to support a 2.5 hour-per-day utilization rate, MATS couldn't do the job alone. The 61st and 62d Troop Carrier Groups were temporarily assigned to MATS; C-74's, C-97's, and C-124's joined the airlift. But as they did at the beginning of World War II, the commercial airlines provided a majority of the Korean airlift capability. Statistics tell the story: between July 1950 and July 1951, MATS moved approximately 29,000 passengers and 11,000 tons of cargo to the combat zone; commercial airlift carried over 80,000 passengers and 17,000 tons of cargo during the same period. As the war went on and Air Force manning improved, MATS' performance picked up; but the need for a larger force-in-being was clear.

Low Profile

Despite the shortage in airlift resources made apparent during the Korean years, change was slow in coming. The Fifties was the era of a growing Soviet nuclear threat and of the strategy of massive retaliation. While the

aging MATS inventory of C-54's was slowly replaced by newer recips, far greater resources had to be assigned to upgrade SAC's bomber fleet and to begin the development of a missile force. Large-scale conventional war may have seemed unlikely at the beginning of the nuclear age and no significant airlift capacity was added to the MATS inventory between the acquisition of the last C-124 in 1951 and the advent of the C-133 in 1957.

Regardless of priorities, the airlift mission continued to grow and develop. Some of the more notable operations during this period included an airlift of Moslems, who had been stranded by a lack of commercial transportation, to Mecca in 1952; evacuation of wounded French legionnaires from Indochina in 1954; airlift of United Nations troops and cargo from Scandinavia, South America, and India to the Mideast during the 1956 Suez crisis; and the evacuation of refugees from Hungary in 1957 when an uprising was crushed by the Soviets.

Significant decisions affecting the future of airlift were made during the 50's—the single manager concept for all scheduled airlift and industrial funding of airlift services became reality and the 62d and 63d Troop Carrier Wings at Larson and Donaldson AFB's were transferred from TAC to MATS. Between 1952 and 1955 the command acquired bases at McGuire, Dover, and Charleston; and in 1957 MATS headquarters was moved to Scott AFB.

Considerable reorganization followed the move to Scott. Atlantic Division, headquartered at McGuire, became Eastern Transport Air Force (EASTAF) in 1958. Continental Division at Kelly AFB and Pacific Division at Parks AFB, California, were consolidated into Western Transport Air Force (WESTAF) with headquarters at Travis AFB. EASTAF took over all routes across the Atlantic, while WESTAF assumed the responsibilities of the Continental and Pacific divisions, including domestic air evacuation.

The arrival of the jets meant big changes in airlift capability.

A final footnote to the 1950's: in June 1954 *The MATS Flyer* appeared for the first time. Among the articles were accounts of two C-97 accidents, some tips on handling amphibians like the SA-16 in the vicinity of vessels, thunderstorm hazards, a special on two "new" MATS aircraft (the C-118 and C-131), and C.R. Terror's first assault on the MATS inventory—a short landing in a C-45.

Leap Into the Future

No other single factor has had as much impact on the development of our current airlift capability as the switch from piston to turbine power. In the great radial engines that powered C-124's and C-121's, the piston powerplant had reached the practical limit of development. Still, aircraft performance was mediocre and engine failures were common. Fouled plugs, runaway props, or broken oil lines frequently transformed a graceful silver giant into a cripple struggling to stay aloft. Jettisoning cargo, flying across miles of ocean in ground effect, and ditching weren't just speculative bar talk or little-used emergency procedures in the Dash One; they were things that happened regularly to MATS crews.

In 1951, the average life of an R-4360 engine on a MATS C-97 was 664 hours; with good maintenance and a little luck, the engine could last to its mandatory overhaul time of 800 hours. Compare those figures to the current 12,000-hour time-before-overhaul for the C-141's engines and the advan-

tage of turbine power becomes glaringly apparent.

But reliability and safety weren't the only arguments for the switch to jets. About 1960, national strategy was changing from one of massive retaliation to a more flexible policy. The concept of deterring conventional as well as nuclear war carried with it the requirement for a modern, high-speed, high-capacity airlift force. DOD and Congress recognized this need, and by 1962 MATS had received C-135A, C-135B, and C-130E aircraft. This initiative for modernization of the airlift fleet also led to the C-141, which joined the operational inventory in 1965, and later to the C-5A.

In his 1961 State of the Union message, President John F. Kennedy said, ". . . I have directed prompt action to increase our airlift capacity. Obtaining additional airlift mobility—and obtaining it now—will better assure the ability of our conventional forces to respond, with discrimination and speed, to any problem at any spot on the globe at any moment's notice." The day of true strategic mobility had arrived. All that remained was to acquire the tools to accomplish the mission.

Decade of Transition

The command's second ten years were filled with change. They were also years of crisis — in Taiwan, the Congo, Cuba, the Dominican Republic, the Middle East —and in each new flareup, MATS was called on for help. The growing airlift to Southeast Asia challenged the capabilities of the shiny new Starlifters and their crews; Air Rescue began compiling a combat record to match their heroic performance in Korea.

Meanwhile, the command was rapidly acquiring its current form. Air Rescue Service headquarters moved from Orlando AFB, Florida, to Scott. Some bases disappeared from the inventory—Larson, Donaldson, Palm Beach. Norton AFB became the responsibility of MATS. C-124's began to retire and two new acronyms—tacan and VASI—were added to the Air Force glossary. And in January 1966, in recognition of its status as a major air command with a major combat mission, MATS became the Military Airlift Command.

Many other new names appeared: Aerospace Rescue and Recovery Service, Aerospace Audiovisual Service, 21st and 22d Air Forces. Air Weather Service retained its designation, but Air Transport units became Military Airlift Wings and Squadrons. And not long afterward, an old partnership ended as Navy aircrews withdrew from MAC.

More Challenges Ahead

The war in Southeast Asia continued to tax the command's capabilities into the 1970's; but the challenges didn't stop when the fighting ended. Operation Homecoming, the return of American POW's from Hanoi, was perhaps MAC's most satisfying postwar mission. Resupply of Israeli forces in 1973, evacuation of refugees from Vietnam, and recovery of the S. S. *Mayaguez* after its seizure by Cambodia provided plenty of opportunities for MAC to fulfill its mission.

The post-Vietnam period also saw the last major change in MAC's structure: The idea of airlift consolidation, which had originated in the days of the Air Transport Command, became reality in 1974 and 1975 when the Tactical Air Command's airlift resources were transferred to MAC. And in 1977, MAC was designated as a specified command, directly responsible to the Joint Chiefs of Staff.

General George S. Patton once said, "To be a successful soldier you must know history." MAC's history is short—but it's so eventful that nothing less than an entire volume could do more than touch on some of the highlights. And the stories of the technical services—ARRS, AWS, and AAVS—would be volumes in themselves. But hopefully this quick glimpse into the past will provide more than nostalgia for the old-timers and information for the younger folks. Maybe it will remind us all why we're here: to support the United States of America in peace and in war. That's been our mission for these last thirty years, as it will be for a long time to come.

And if it weren't for that mission, we wouldn't have a history at all.

Mishap with a Moral

The C-130 Hercules incorporates many fine systems that contribute to its legendary dependability and safety; one of these is the brakes. But like any other mechanical system, if you don't treat it right, it can bite you. In fact, some of our most costly accidents come from overheated brakes and wheel-well fires.

Most crewmembers know that hot brakes can occur after a rejected takeoff or an unsuccessful windmill taxi start. However, some normal operations can heat up the brakes dramatically. The best known brake buster is dragging or riding the brakes. This constant, light pressure can generate more heat than a rejected takeoff. The multiple low-speed brake applications sometimes used when taxiing in formation can also build up a lot of heat quickly because the brakes don't get a chance to cool off.

Getting Hot

Recently a C-130 crew didn't show "proper respect" for the brake system during a series of taxi tests and the brakes reacted in kind. This bird had a history of brake and antiskid writeups. Maintenance had been trying to fix the system for a couple of months, but problems continued. Symptoms on the mission before the accident were brake chattering during taxi and an uncommanded, rapid release and reapplication cycle of the brakes during engine runup.

Maintenance control requested an aircrew for a full-power engine run with the parking brake released. The information that maintenance supplied the crew was a little confusing, so the AC called the pilot who'd made the previous day's writeup. With a better understanding of the problem, he decided to take the aircraft to the runway to do taxi tests in an attempt to duplicate the malady—a task that's reserved for FCF crews.

The brakes were used very little during the one-mile trip from the parking spot to the runway and there were no malfunctions. The crew did a maximum power engine run and the brakes held; a high-speed taxi test was next. The airspeed indicator showed about 40 knots when the engine-low-oil-quantity light blinked and the crew aborted the test and slowed the C-130 using ground idle and brakes.

Since the brake problems hadn't yet been duplicated and the engine oil quantity looked okay, the

AC decided to try it again. They taxied back to the runway and the brakes chattered a little, but the crew and technicians on board thought it might be air in the hydraulic lines. Two minutes after the first run, the Hercules accelerated down the runway to 90 knots and was again stopped by using brakes alone. The pilot believed that the brakes felt as though they were about 50 percent effective. They taxied back for still another test run. The pilot set the parking brake and discussed the previous runs with the maintenance folks. Three minutes later, the pilot released the brakes; the C-130 wouldn't move forward with ground-idle power. More power was applied and the Herk lurched forward. The AC taxied the aircraft onto the runway, applied the binders and ran the engines up above 900 degrees TIT—the brakes held.

The third test produced unmistakable indications of brake problems. When the pilot applied the brakes, sparks and flames erupted in the wheel wells. The 130 was stopped using reverse thrust. The ensuing brake and wheel-well fire did over $49,000 damage.

Keeping Cool

The crew had some help in making wrong decisions about using the brakes. None of the technical manuals, particularly the Dash One, is very clear about how much and how often the brakes can be used. Sections II and VII of the Dash One use words like *excessive, prolonged* and *extreme temperatures.* There isn't much quantitative data and there aren't any brake limitations charts. Change nine to the C-130B/E Dash One has reworded the guidance on using the brakes in section VII and new information is on the way for all the Hercules' Dash Ones; brake limitations charts are also in the mill. Until then we're not destined to burn up more C-130's if we'll follow some sage advice from the Hercules' maker. Although many of these words are in your tech orders, this is a consolidation of information from Lockheed's *Service News.*

First some numbers. Peak temperatures in the brakes occur about one to five minutes after use and in the wheel well and tire assembly about 15 to 20 minutes after maximum braking. That's why lots of "little" brake applications just before or after a hard stop can be disastrous. Of course, the rule of leaving the gear down for 15 minutes after takeoff if you've just done a heavily-braked landing is still good. And the B/E-model Dash One warns, "After any heavy braking operation (aborted takeoff, high-speed taxi check, maximum antiskid braking, etc.), allow a minimum of 45 minutes to assure adequate brake/tire cooling prior to further aircraft operation." Finally, Lockheed says that the brakes may have to cool for *two to three hours* before they are safe to work on.

This brake stack was fused by temperatures which may have reached 1,900° F.

In conclusion, *Service News* says, "Remember, take care of your brakes and they will take care of you when you need them. Abuse them, and they may not be there when the end of the runway is approaching."

Honorable Mention, 1977 MAC Flying Safety Writing Contest

Mummph's Memoirs

by Lt Col Charles W. Hines
MAC Operations Center
Scott AFB, Illinois

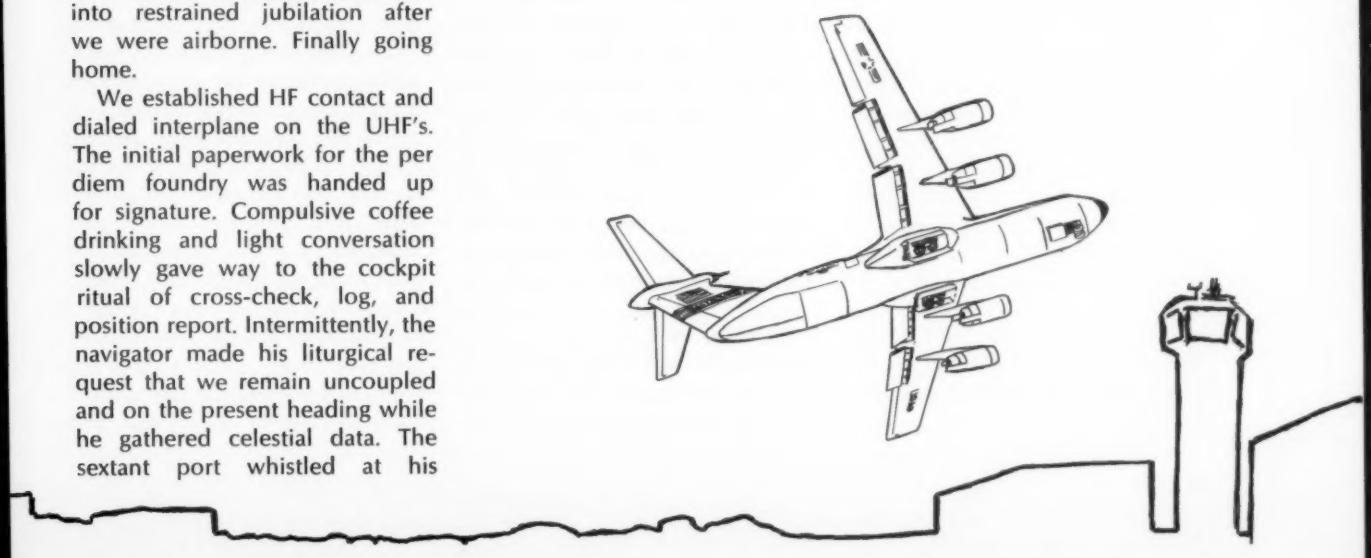
A corollary to Murphy's Law says, "Things always go most smoothly just before coming completely unglued." Here's a true story to prove it.

In late autumn 1968, I was flying C-141's out of McChord. This particular mission was a routine Yokota-to-McChord leg carrying two pallets of retrograde cargo, no pax, a basic crew, and a deadhead crew. The deadheaders were returning to home station after having a major in-flight accident. The investigation and accident board had extended their six-day trip into something closer to a month. They were already on the airplane when we arrived. Their bags were stowed and they were hunkered down and ready to get on with it—didn't even want to take the time to get flight lunches. Their collective impatience turned into restrained jubilation after we were airborne. Finally going home.

We established HF contact and dialed interplane on the UHF's. The initial paperwork for the per diem foundry was handed up for signature. Compulsive coffee drinking and light conversation slowly gave way to the cockpit ritual of cross-check, log, and position report. Intermittently, the navigator made his liturgical request that we remain uncoupled and on the present heading while he gathered celestial data. The sextant port whistled at his awkward and contorted crouch against the bunk. The night was gentle and the winds were good.

Turning south over Vancouver Island, the copilot consumed the last of his emergency cheese sandwich. The sweeping and dusting of the cockpit was completed. The weather for arrival at McChord wasn't bad for 0320 local: 2,500 scattered, winds calm, RCR 8, landing runway 34. We would have 23,000 pounds of fuel remaining and the alternates were good. The deadhead copilot strapped into the jump seat, and the descent briefing was completed; we started down a few miles north of Victoria.

For some months spoiler techniques during descent had been a topic of conversation in the squadron. One argument was that a "good pilot" was a "smooth pilot" and that a "smooth pilot" didn't use spoilers during descent because of the slight burble and shake they caused. The vibration might be a source of some momentary anxiety to the passengers. The implication was that descent spoiler users were bear-handed, primitive, and insensitive abusers of the technology at their fingertips. The counter-argument noted that the spoilers were de-



signed to be used and could be deployed with delicacy and without discomfort by any pilot who cared enough to master the simple motor skills involved. My descents had always included the use of partial spoilers, but this night I decided on a no-spoiler descent—to see how it would work with a relatively light airplane.

I used the TTU formula for descent distance and the clean descent worked just fine. Slowdown for configuration didn't require spoilers, either. Gear was down, checklist complete, and the PAR final controller came on the line. Runway in sight. Roundout. And another grease job.

A murmur of congratulatory comment echoed from the lower bunk section. Idle reverse on all four. Spoilers deployed. Four green lights on the engine reverse panel. The aircraft showed an ever so slight tendency to drift toward the left side of the slick runway. A little right brake and a bit of nosewheel steering would take care of that.

The drift continued. A little more brake to the right, some more nosewheel steering, and both the left engines were placed in forward thrust. The two green lights were out and verified the forward thrust. The left drift from centerline was increasing now. In fact, it was no longer just a drift. It was a growing force.

The sudden threat brought a shift in the perception of the passage of time. Seconds expanded into periods of extraordinary duration and the pulse rate increased. The crew on the flight deck became conscious of a severe rolling tendency to the left. The aircraft felt as though a giant had secured a tether to the tip of the left wing and was pulling on it with a force that was increasing in exponential fashion. It was clear to me that the aircraft would not remain on the runway. It was also clear from the rolling tendency that the aircraft could not simply be stopped somewhere out there in the dirt. The wing would dig in. A stunning combination of cartwheel and groundloop would follow and we would become a flaming puddle of widows' memories. Another 100 feet and we would depart the runway at 86 knots.

"Go-around EPR. Flaps approach."

It is always difficult for a pilot to endure an approach and landing as a passenger in the rear of the aircraft. All those grinding sounds of moving flaps, gear, and switching hydraulic pumps have sequential meaning which communicate the progress of the flight to those in back. The aircraft was now accelerating across the dark dirt field with TRT applied to all four engines. The deviation from the expected was an overwhelming stimulus to the deadhead aircraft commander back in the cargo department. He unstrapped, staggered forward, gripped the hand rails of the flight deck ladder and inquired repeatedly, "What the hell is going on?" His grip was firm, but his feet kept pedaling in search of a foothold on the flight deck ladder. The acceleration of the aircraft denied him a foothold and he fluttered there, an angry human flag whose fighting low quarters could be heard above the engines' bite. The copilot reported that he couldn't move the spoiler handle from the ground position.

"The petal doors were grazing the gravel with a cement-mixer sound."

The runway was well to the right and the lights ahead were those of the taxiway perpendicular to the runway. The dirt field was bumpy and contained a variety of obstacles—the GCA shack, for one. The aircraft was not at all anxious to fly. More back pressure. I pushed the throttles all the way to the stops. The difference between setting TRT and stiff-arming the throttles was significant—a tremendous amount of power was lurking in that last inch or so of travel. The nose was 23 degrees above the horizon and the petal doors were grazing the gravel with a cement mixer sound. We were *almost* flying, and the copilot was still battling to get the spoilers out of the full ground position.

Finally, we struggled into the air. Full right rudder and aileron would not keep the airplane from drifting severely to the left. The ball in the turn-and-slip was locked to the end of the tube. It

was flying but not climbing with much spirit and I warned over interphone of the possibility of our hitting the command post. The navigator noted that it would be a damn shame if the command post duty officers were killed in an aircraft accident while manning their desks.

Crew morale was holding up, but the spoiler emergency retract switch wasn't doing anything. The copilot used both hands trying to pull the handle up. The "emergency off" position worked after several tries—and the aircraft bounded forward and up. We heaved a collective sigh of relief, climbed into a VFR pattern and turned crosswind.

The view from McChord tower is splendid, without impediment, and there is no visual doubt as to when an airplane is on the ground. On the crosswind leg the tower operator called and made one of the most diplomatic inquiries ever phrased: " . . . did you have any difficulty on that last landing?" We called the command post, informing them of the nature of those "difficulties," and requested the runway be checked. The tires looked good, but the scanner reported a lot of dirt in the wheel wells. The second landing, without spoilers, was normal and without incident. We taxied in and parked it. The engineer asked if he should log an assault landing.

Damage was slight. A broken taxi light. Some paint was required on the bottom of the ramp and centerline exterior of the petal doors. Half the runway-remaining signs on the left side had been flattened by the blast of the engines. EGT and N_1 and N_2 rpm had remained within limits even with the excessive power applied. The copilot's knuckles stayed white for two days . . . and the customs inspector wondered why we had been driving around out there in the dirt.

On landing, the spoilers had deployed to the full ground position and then the right spoilers had slowly retracted back into the wing. A defective spoiler pack was verified by depot teardown. It is a tribute to those TF-33's that the aircraft could actually fly with that much asymmetry of lift. The spoiler systems have since been modified with throttle and gear switches that make a go-around considerably less sporty should a system defect occur.

As a matter of technique, the use of spoilers in descent is still pretty much one of taste and situation. An asymmetry during rollout on a dry runway may only check your adrenal system—but it can be a super challenge when the runway is wet or carrying a low RCR. *Why test them, for the first time in ten hours, on the runway?* If you don't *need* them for descent, just crack them a little on the way down and get some nice warm hydraulic fluid out there to comfort those chilled seals.

On occasion you may have used the spoilers in flight and produced the beginning of a roll. The spoilers usually get retracted pretty fast and, when you try it again, everything is symmetrical and works perfectly. But when you experience that spoiler roll in flight—write the system up. A spoiler incident is waiting to happen to someone if you don't bother to document that rolling tendency.

ABOUT THE AUTHOR

Lt Col Hines entered the Air Force as an aviation cadet in 1958. His initial assignment was to SAC's 3d Strategic Support Squadron, flying C-124's; he eventually accumulated 5,500 hours of Old Shakey time in SAC and MATS. Lt Col Hines' 10,000 accident-free flying hours also include 3,500 hours of C-141 time and 1,000 hours of combat experience in the O-1, O-2A, and OV-10.

The author holds a bachelor's degree in social science from the University of California at Berkeley and a master's from Pacific Lutheran University. A command pilot, he is currently working as a Senior Airlift Controller in the MAC Command Center.

The Airlift Legacy

C-130 Hercules

The Lockheed C-130 Hercules is one of the best known and most widely flown airlifters in the world. The Hercules was conceived in 1951; the first of over 1,500 C-130's flew on 23 August 1954. The first USAF C-130A, tail number 55023, was christened the "City of Ardmore" and delivered to the 463d Troop Carrier Wing (TAC), Ardmore AFB, Oklahoma, on 9 December 1956. That unit is now the 463d Tactical Airlift Wing (MAC), Dyess AFB, Texas.

MATS' first C-130 was the RC-130A, like the one pictured above. Sixteen RC's were delivered to Air Photographic and Charting Service during 1959.

The original C-130's were 95 feet 2 inches long, 38 feet 4 inches high and had a wing span just under 133 feet.

The four Allison T5-A-1 turboprops produce 3,750 horsepower

each and move the Hercules along at a 290-knot cruise speed. The cockpit and cabin are fully pressurized and the service ceiling is billed as 40,000 feet, but 25,000 is a characteristic cruise altitude.

The C-130 has served the United States as both pack horse of war and angel of mercy. The C-130 can carry 92 combat troops or 64 paratroopers, and can be reconfigured for 74 litter patients. The E model's takeoff gross weight is 155,000 pounds. A fuel capacity of nearly 63,000 pounds gives the Hercules a max endurance of over 19 hours at 280 knots TAS.

When MAC acquired the tactical airlifters in 1974, hundreds of C-130E's put on the blue and gold globe and arrows for a second time. Herk number one, the "City of Ardmore," is with the 928th Tactical Airlift Group (AFRES), O'Hare IAP, Chicago, Illinois.

Eliminating the Wife Error

Flying safety people have long contended that if you aviate, your spouse can be hazardous to your health. Here's a tongue-in-cheek look at the other side of the coin.

by Jackie Starmer
from The MATS Flyer,
August 1963

Every Air Force wife knows that keeping her ever-lovin' happy and content is her primary duty in life, and that any additional duties thrust upon her such as birther of babies, pumper of bicycle tires and dispenser of meals, medicines and money, are strictly her own puddle of mud and fer gawd sakes don't splatter Hisself with family problems, particularly before he hits the blue. And if this were fact instead of wishful fancy, all Flying Safety Officers could retire to Peru and raise wart hogs.

Since it has long been the contention of Flying Safety Officers that preoccupation with family problems oftentimes causes upset aviators to bend or even bust their birds, which in turn causes everyone from the commander to the guard at the gate to get in a royal snit, it is obvious that something has to be done to eliminate the chain reaction resulting in "pilot error," or if you prefer the more honest term, "wife error."

And since it is impractical to abolish all existing MAC marriages, and wives will innocently or otherwise continue to muddle up Hisself's mental state before, after and during missions, it is suggested that a mandatory indoctrination course be held for

wives of all flying personnel, briefing them on the hazards of hubby's home life—with particular stress placed on the importance of Twelve Hours Twixt Fight and Flight. Naturally, this course should be taught by a highly qualified instructor—someone with years of intimate knowledge and experience in creating these hazards . . . me, for instance.

Having been a veteran Air Force bride of seventeen years, I have been thoroughly oriented, indoctrinated, inoculated and regulated in all things military . . . I wear white gloves through receiving lines, I demand crew rest after birthings, I medicate my family with the standard Air Force prescription of APC's and orange juice for every ailment from vertigo to obese ear lobes, I have never driven a follow-me jeep into a parked aircraft, and above all, I keep a calling card tray near the front door —where it seldom collects anything but cigarette butts, flight lunch can openers and balls of rug fuzz. The important thing is, it's there.

It seems that in spite of this excellent Air Force training and background, I find that as a perfect wife, I ain't much. I find this, thanks to the snide remarks of a Flying Safety bohunk whom I shall bite in the neck at the first opportunity. Now, I'm actually aware that Hisself should go beanless before a mission, but how was I to know that rutabagas are lethal? There's not one word in the flying safety manuals concerning rutabagas! It seems that rutabagas cause Hisself's gastric juices to over-gast something fierce, particularly when he's shooting landings; and the high cholesterol content riles up his fatty tissues to a fare-thee-well, also particularly when he's shooting landings and when these two evil forces collide in or around the old gump's pituitary, well . . . all hell breaks loose. And because of this slipshod oversight by safety manual writers, one airplane is busted for a year, the runway is undergoing extensive repairs, and a mangled C-141 now reposes in my living room as a plastic-covered hassock.

Aside from being responsible for the home menu hazards, there's no doubt that we wives are held accountable for the daily problems of marital bliss that mayhaps miff an aviator to the point of being a potential wing-buster. Contrary to popular opinion, Hisself does not become a snarling beast only when his flaps won't flap, or his rudder won't rudd, or he wasn't promoted when he by-gawd shoulda been . . . no, these routine problems don't put our Sky Kings into an accident-prone mental state.

Actually, it's the little things that cause Hisself to come unglued . . . which is why a wife should always check the flight schedule before she indulges in an indignant account of why she turned the hose on the base commander's wife this morning and just who does she think she is anyway! And say did I mention that Junior stuffed a prune up his nose and don'cha know that he won't get that scuba diving scholarship since no one can scube with a maimed nostril and, my gawd, that bank should oughta hire bookkeepers who can add because we can't possibly be overdrawn *that much!*

And many a wife has been the cause of a feathered engine or, at the very least, a kinked relief tube, because of her unguarded reactions to Hisself's blue funks, which usually develop in every normal husband at two critical periods of the day—breakfast and dinner. Although the dinner hour at our house has all the serene atmosphere of the Ali-Spinks fight, ("git yer elbows off the table, don't eat so fast, clean yer plate, my-gawd this kid will be eating with his fingers when he's thirty-five years old, git the cat off yer lap . . ."), I would say that of the two, the breakfast hour is the more critical period.

This is when, if we wives are to be instrumental in keeping the accident rate down, we must repress the overpowering urge to clout our roommates with their jump boots when the pre-dawn conversation consists of, "And what cooking secret do you use to make these eggs taste like Ben Hur's old sandals" . . . and/or "My, my, dear—you look about as sexy as a stopped-up sink in that flannel puptent." Husbandly re-

marks such as these are usually the signal to square off and have at it. But to insure a tranquil pre-mission mental state in your sky-jock, remember to say absolutely nothing. Indignant rage and revenge can be subtly expressed in other ways—possibly you can jam all the zippers on his flight suit or go retch on the seat of his Honda.

It goes without saying that family problems occurring during an extended TDY have caused more than one airplane crew to come nose to nose with an unexpected object—like a mountain.

This is a period in his life when he must be spared all worries other than will he win at bingo tonight and how soon can he get an R & R to Waikiki.

Naturally, a long TDY is a bucket of worms to the wives left sitting on their hassocks, and unless Hisself pacifies the little woman with more letters than a once-a-week note (usually as romantic as the daily bulletin and as short as commissary hours), she will discard all efforts at morale building and manage to let him know that simply because he's three thousand miles away he needn't think that kids, mumps, fights and bills don't still exist fer heaven sakes and a pox on your mental state and what about mine!

Although many a TDY wife is blessed with a husband who, though he reads fairly well, doesn't write, and has often wished that her roommate was as prompt and eloquent in writing love notes as he is in filling out his per diem voucher, it is suggested that she refrain from penning any epistle to her absentee aviator that might possibly result in violent chain reactions. Crippled aircraft beget commanders into snits; snitted commanders beget the nervous dizzies in pilots; the nervous dizzies is what begot Hisself into this damned mess in the first place, and all on account of I wrote him the following letter:

Dear Pen Pal,

Will answer your note of three weeks ago before I get dressed for work. Oh yes, I've taken a job to occupy my time while you're away . . . the pay isn't much but *zowie!!* is it interesting! I'm a BOQ Housemother, 8 p.m. to midnight shift.

By the way, did I tell you that our dog is at the vet's? No, he isn't sick; he's under quarantine. He bit that Security Police honcho—the same sorehead who gave me a speeding ticket and suspended my driver's license last week when I accidentally ran through a stop sign during retreat in front of base headquarters and plowed into a staff car sporting a monogrammed flag the size of a bedsheet. No serious injuries, except to one fella . . . he looked sorta like your wing commander but it was hard to tell with all that blood on him. Come to think of it, it just might've been. Oh well, whoever he is, he sure has a temper!

I won't bore you with the rest of the details except to say that the damage to our car was slight. Eight hundred dollars will fix it up as good as new . . . which reminds me, the last check I wrote seems to have bounced and I guess that's the reason your name was put on the control roster.

In closing, let me reassure you that everything is under control here at home and no need for you to worry. Fly safe and keep in touch, pal.

Your ever-lovin' wife

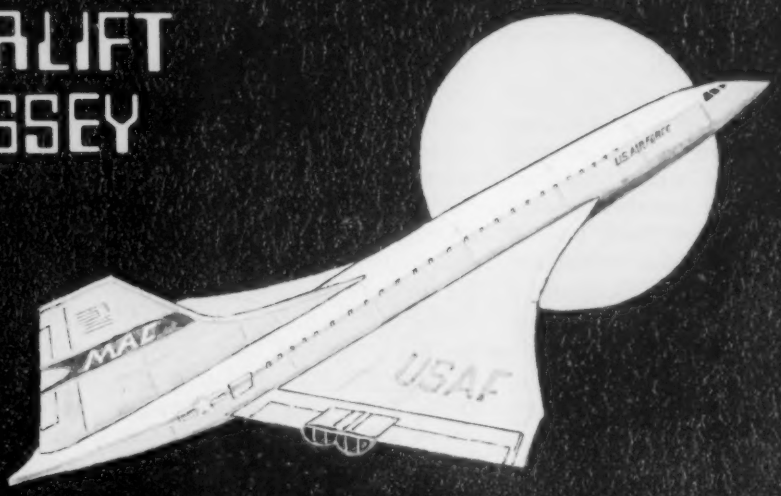
P.S. . . . Whaddya know! It *was* your wing commander.

Like I say, something has to be done to eliminate the "wife errors" resulting in accidents. And it is to the everlasting credit of one particular Flying Safety Officer that he tried to do his part in preserving the accident-free record of his outfit. However, because of his devotion to duty in attempting to erase "wife errors," the poor bohunk was medically discharged with unusual injuries . . . neck bites.

Actually, the only solution as I see it, is to eliminate the basic causes of "wife error" . . . husbands, fr' instance. Without the old gumps, the problem would be solved and Flying Safety Officers would become as obsolete as promotions and 9-4 OER's.

2008: AN AIRLIFT ODYSSEY

by Lt Col Orlen L. Brownfield
Supervising Editor



For a valuable lesson, study the past—but for sheer excitement, study the future.

C. R. Terror in a space suit? Who knows? a meeting of seers, prophets, soothsayers, and revelators concerning the future of MAC would surely be filled with fantasy, conjecture, and dreams approaching science fiction proportions. In February 1978, a story by Captain Terry Lowe of Norton AFB appeared in these pages. "Fail-Safe?" was a fictional look at MAC in 1998. MAC's "spacehorse" was the Lockheed C-500 and Captain Lowe's typical MAC crew was launched on a "moon-turn-around." Far-fetched? Perhaps. But the fact is that we have the technology to perform such feats today. Necessity will dictate when, if ever, that technology is used. The "Military Aerospace Transportation System" may be just a figment of Captain Lowe's imagination, but . . .

Let's crank up the time machine and take a look at MAC, circa 2008—another 30 years. To do that we'll have to fantasize, conjecturize, and, yes, dream a little.

As any good navigator knows, the best way to determine where you're heading is to take a couple of fixes. Compare a past fix with your present position and that gives you direction as well as velocity. Using that info, we DR (dream and revelate) ahead and get a fairly good estimate of our future position. Again, a good navigator will refine his prediction with known changes of wind (or winds of change) thus making the prediction more credible.

Spanning the dividers from 1948 to 1978 is covering a hell of a lot of ground. I doubt that even General Kuter, MATS first commander, envisioned 450-knot C-141's, 350-ton C-5's, or combat assault C-130's back in '48. Surely, the C-54 driver flying a load of coal up the Berlin Corridor would have scoffed at any suggestion of hauling 80 tons in *one* aircraft from Chicago to Moscow, *nonstop*. In 2008, will some *TMF* editor say, "I'll bet those Moscow-bound pilots would have scoffed at . . . "?

With 30 years set on the dividers, can we span them from 1978 to 2008 along a vector of "faster, heavier, and more versatile"?

Faster

There'll still be a big MAC/little MAC routine. The Mach 3 SST driver will be in a different class than the "heavy" pilot but since

his craft will gross out at over 3,000,000 pounds, the question of who's "big" and who's "little" will be tough to answer.

Mach 3 supersonic transports in MAC? Why not? Moving 600 troops on one aircraft from Pope AFB to Berlin in less than two hours would be a reality. A small squadron of SST's could put men and equipment anywhere on the globe in six hours' flying time. If this sounds far out, remember that engineers were designing a Mach 3 SST capable of carrying nearly 300 people *15 years* ago. And Concordes are daily passing American flagships in foreign airspace.

Heavier

The C-5 and 747 ushered in a new era in airlift. Gross weights over 500,000 pounds were B-52ish before; now a 747 can get airborne weighing nearly 900,000 pounds — almost *six times* the weight of a grossed-out Hercules. Craft of the "Close Encounters" size may not be within 30 years, but the '08 model jumbo is bound to boggle the mind of today's aircrewmember.

It is conceivable that 21st century transports will carry *all* of the Army's equipment — making the "beachhead" a not-so-fond memory and rendering sea routes as out-of-date as wagon trails.

More Versatile

Vectored thrust, variable sweep wings, high flotation landing gear, and exotic fuels just might give tomorrow's tactical transport the capability to move very far very fast, and land and take off from football-field-size clearings.

What about containerized airdrop of equipment *and personnel?* Or ECCM gear on all MAC aircraft?

We've seen the greatest strides in the field of navigation over the past 30 years. Astrocompasses and drift meters of those early MATS days lent an air of mystery to that business; navigators were more "magician" than "Magellan." Today the orthogonal triad, a series of accelerometers making up the inertial system, is making navigation a true science. Twenty-first century navigators will not be concerned with magnetic variation, precession, nutation, or coriolis. Future NavSats will provide the navigator with latitude and longtitude to the nearest second of arc—100 feet as compared to the two-to-three mile accuracy of tabulated data in the Air Almanac. On-board computers could make tacan, ILS, and drop zone markers as memorable as the "Eureka" beacon. Weather satellites may provide the ultramodern Magellan with a "now" meteorological picture via a CRT on board.

Winds of Change

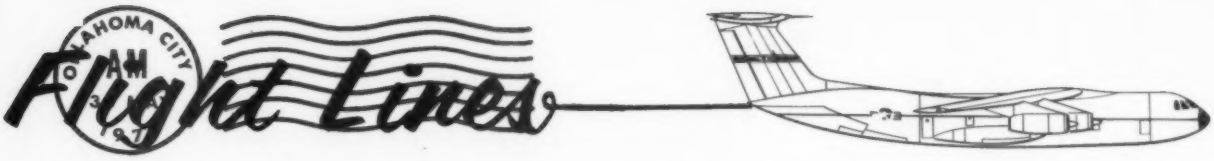
Will future MAC pilots fly AMST's, SST's, or the Space Shuttle? It could very well be—based on the progress of the past 30 years. But, then again, what about those "winds of change"? We now live in an era when inflation and dwindling petroleum supplies are enemies of progress. In 1964, we thought we could build an SST for 30 million dollars a copy; today, an equipped DC-10 costs that. In the '60's, JP-4 cost slightly more than ten cents a gallon; 1978 prices run around 43 cents per gallon. These are *real* facts that signify a plateau in progress. But as new sources of energy are developed and new, cheaper fuels become available, watch out!

It's doubtful that tomorrow's aircraft will be run by a petroleum product. Nuclear, hydrogen, and more exotic power sources will be developed—by necessity. Perhaps the 21st century SST will run on *water*.

Rescue hover craft may be of the "lighter-than-air" variety, taking advantage of the "buoyancy principle" that governs the operation of submarines. Large super-lightweight ballast tanks could be pumped free of air, providing more lift than helium or hydrogen—requiring no power to hover and very little propulsion for horizontal travel. On a larger scale, such lift might be used to raise huge craft to the very edge of the earth's atmosphere with very little power consumed.

Well, we said we'd dream, didn't we? But keep in mind the old adage about "necessity being the mother of . . ." and look at the crises (real or imagined) that we're faced with and it isn't hard to conceive that the next 30 years will be even more exciting and awesome than those that have passed since Kitty Hawk.

Thanks, Wilbur. Thanks, Orville.



★ We've received several interesting letters appropriate for our special issue. Parts of them follow—without our customary scintillating, witty responses.

Airlift, African Style

In November of 1942, six heavily laden C-87's departed West Palm Beach, Florida, for the South Atlantic area — final destination unknown. These aircraft were piloted by experienced, recently commissioned airline pilots. The balance of the crews, including myself, were fresh out of Army schools. As a navigator trained by Pan American Airways at the University of Miami, I was supposed to have the ability to fly long overwater routes using celestial navigation—but this had never been tested.

Once out of the States, we opened our secret orders and found that we were headed for Cairo, Egypt. Our cargo was evidently destined to be delivered to the British Army, then engaging Rommel somewhere west of Cairo.

Initial runs to Cairo were not without incident—including one nearly disastrous attempt at a night landing at Kanis. Night landing facilities weren't available and other navigational aids were practically nonexistent. Finding a runway outlined by flare pots during a season when Africans burn off their lands to clear them for planting is definitely not recommended. We ended up at an alternate—which was never designed to handle four-engine transports!

Shortly afterward, the invasion of North Africa took place and these six aircraft were assigned to fly a new route that truly involved pioneering in aviation. The route was 2,300 miles nonstop across the heart of the Sahara Desert from Accra, Gold Coast (Ghana), to Algeria.

The initial flights across the desert ended at Tafaroui, an airport at the northern foot of the Atlas Mountains, a few miles south of Oran. Navaids, maps and charts, weather reports, and briefings were practically useless on this run and successful completion relied heavily on celestial navigation, conservation of fuel, and a good dose of luck.

It was not unusual to wind up after a very long night in the middle of a snowstorm over the Atlas Mountains. Letdowns were made (hopefully) over the Mediterranean and more than once our aircraft were greeted by bursts of fire from the U.S. Navy or the British and French. The only Germans we ever sighted occasionally flew over at very high altitude to drop a few nuisance bombs.

Each trip was an adventure. My navigation log carries one trip of fourteen and one-half hours—and it was not unusual to complete the journey with barely enough fuel to taxi off the runway. We knew that if we ever went down, we would probably not be found—since no other aircraft had the range to search for us.

Of the original six C-87's I believe two were lost—one on landing and the other on a flight from Accra direct to Natal. We searched the African coast for days but saw no signs of survivors. I later heard that a raft containing dog tags of some of the crew was washed up on the beaches off Natal.

Sometime later the C-87's were replaced with C-54's, which seemed at the time to be a giant of an aircraft and a tremendous improvement in air transport. I ended my two and one-half years tour of duty in Africa flying C-54's from Marrakech and Casablanca to Cairo and return—and on "Green Project," flying grateful soldiers and sailors out of Africa back to Miami.

Charles S. Breslauer
Lt Col (Ret) USAFR
Boca Raton, Florida

The C-87, cargo version of the B-24, pioneered ATC routes in the South Atlantic and Africa.

We welcome letters from our readers and print all that space and good taste will allow. Send your letter to:
The Editor, *The MAC Flyer*
HQ MAC/IGFE
Scott AFB IL 62225

Early Air Evac

I'm sending you a photo of the 13th Aeromed Squadron at Travis, an outfit I commanded.

Ev Langworthy
Gaithersburg, Maryland

Portrait of an aeromedical airlift squadron, 1957 style.

The Hump

During World War II, I served with both the India-China Wing and European Wing of ATC. I've enclosed some pictures taken during a ceremony in which the India-China Wing was awarded the Presidential Citation and Distinguished Unit Ribbon and Badge.

Col Robert G. Hartnett, USAF (Ret)
Bainbridge Island, Washington

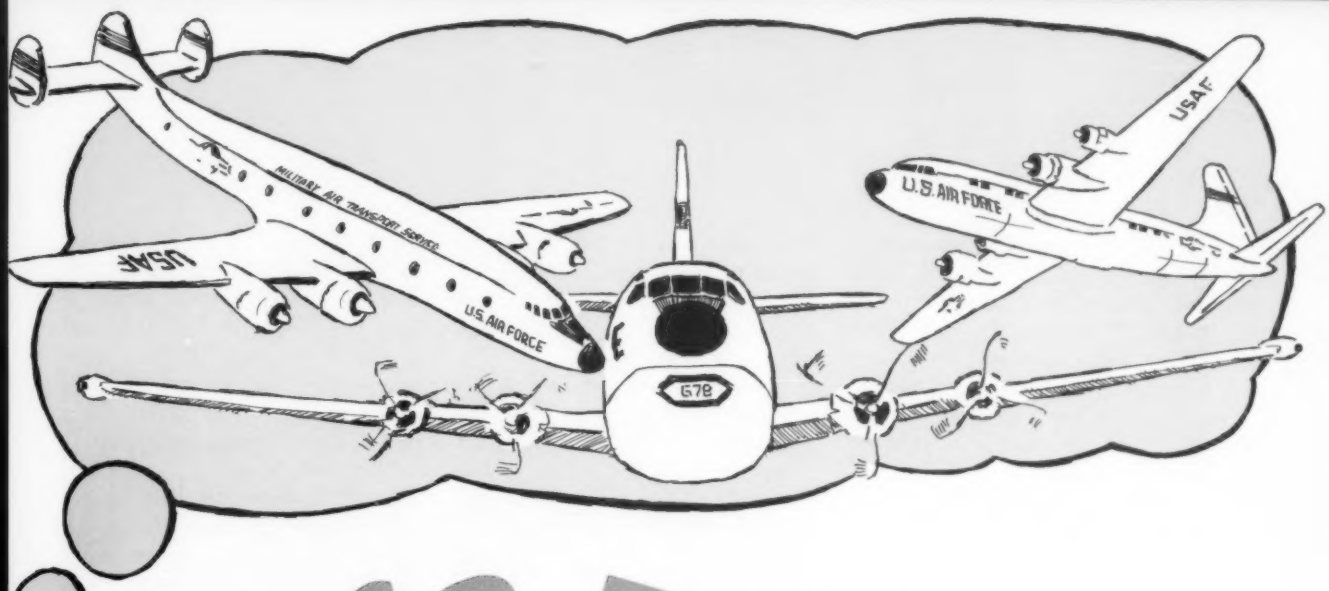
General Stratemeyer decorates the colors of the India-China Wing at New Delhi, India.

C.R.'s Roots

As the old, bold retired retread who not only started *The MAC Flyer* but also invented C.R. Terror one night in the heady vapors of a "two-fer" night at the old Andrews AFB Officers Club, I have two small favors to ask: (1) Since I have recently moved to Arizona, I'd like my address changed so I won't miss a single copy. As a gent who's currently finishing two screenplays on the AF: "Chennault—China Tiger" and "Eighteen Holes to Freedom" (based on the nav who escaped from North Vietnam by playing golf) I find it very helpful to keep abreast of the latest derring-do's and jargon of my old alma mammy. (2) As insigrievous as it sounds, I'd like a C.R. Terror T-shirt. It would be a smash hit on location.

Many thanks, gang, and keep up the good—nay, the great work.

Col William C. Anderson, USAF (Ret)
Mesa, Arizona



C.R. TERROR

The Rotund One reminisces about some good old days — and some not-so-good ones.

"Gee, Boss," Sam shook his head. "I read in the *ComPost* today that MAC is 30 years old this month."

"Right, my uniformed youngster," the Rotund One lifted his glass. "A toast to Mother MAC—she'll now be 29 forever, hee, hee."

Sam and Blinky chuckled and lifted their beers in a mock toast.

"You know, Sammy that's not quite true," the Hyperbolic Historian mused. "I suppose the purists would say that MAC was born in 1966, when we had a name change from 'MATS' and had a personnel shuffle."

"MATS?" Blinky looked perplexed.

"How quickly they forget," C.R. moaned. "MATS, my memoryless Magellan, was *the* Military Air Transport Service — though with the reliability of some of the aircraft we flew, many folks thought 'May Arrive Tomorrow, Sometime' a more appropriate name."

"How long have you been in the command, Skipper?" Blinky queried.

"Blinky, m'lad, it was 1954 when I first slipped the surlies . . ."

"Gosh, 24 years and already a major," Blinky giggled.

The Bold One's countenance reflected a disparaging glance. Blinky squelched his laughter.

"I was Captain Terror, then," C.R. reminisced. "It was kind of neat. We had a bunch of swabbies flying in MATS. And when I'd call for crew transport on a Navy station and say, 'This is Captain Ter-

ror!' I got immediate attention."

C.R. leaned back in his chair and savored the olive from his defunct Terrorific 'tini. He waved at the leggy waitress across the barroom. "Food and water for my men and horses," he commanded. "Another 'tini and a couple of beers."

"Want to roll for them, sir?" Sammy shook the dice cup.

"Naw, lemme buy," the Round One responded, "in celebration of my 24th year and MAC's 30th.

The Legendary Lecher's smile changed into a broad grin as the waitress returned. "What are the damages, pet?" His cherubic face turned upward.

"That'll be two and a quarter, sir."

"Damn! Talk about the good ol' days," C.R.'s smile faded. "I remember 15-cent martinis at Chateauroux."

"And I remember 29-cent-a-gallon gasoline," Blinky interjected.

"Everybody's out to get a buck. Take the money and run. Avarice and greed," C.R. grumbled. "And those are only symptoms of what's ailing the world," the Fanatic Philosopher's voice began to rise. "There's no trust, no personal integrity! Nobody's accountable anymore!"

"Hey, easy, Boss," Sammy soothed. "You're liable to overboost the old ticker."

"Er, yeah, Sammy, you're right," he once again relaxed his roly-poly person into the soft O'Club chair and sipped his martini. "It's awful easy for me to get the soap box out when we talk about the thrills of yesteryear."

"Yeah, Boss, but isn't it true that you remember only the pleasant things?" Blinky asked.

"Not at all, my pedantic plotter of Polaris and Procyon," the Aviator with Avoirdupois announced. "Your business, for instance—navigators in MATS were *real* navigators. They had to be. With 'Old Shakey' grossed out at 185 grand, her optimum altitude was around an ethereal 8,000. You high flyers may not realize it, but there are more than a few rocks on every continent that stick up higher than that. Sure, we gave navigators the same ribbing as now—but those guys were magic. In the soup, keeping us clear of nympho-cumulus and cumulo-granitus. A bunch of pro's—not like you computer programmers of today."

"I dunno, Boss," Sammy said, "you remember last year when we were going into Cubi Point in that rain storm and you went missed approach. Blinky was the one who pointed out that we were headed for that mountain. That could've been sticky."

"Nonsense, number two, I, er, ah, *knew* that terrain was there—merely testing our navigator's skill." C.R. remembered all too well. "And besides, it's not just the navigators—the old C-124 engineers—changing generators on an engine, in flight! Why, they had throttles, mixtures, prop controls—those guys sweated blood to earn those silver wings with the prop and engine on them."

"Sir, I don't know much about these things," Blinky allowed, "but it seems to me that a few months ago, you were going to land the bird with the nose gear up—until Sergeant Torque convinced you that he could get it down and safe. That saved you a hell of a lot of embarrassment."

"Hmmmfph, what's a navigator know?" a rhetorical C.R. asked. "One thing for sure, the 'loadmasters' we carried on the Super Connies were much better looking than those we have today. The forms they filled out weren't the '365 F' variety either, heh, heh." The Bold One winked at the passing waitress and continued.

"You know, with the modern aerial port and computer load planning, we really don't need to carry a loadmaster," the pensive pilot pondered. "The freight guys could just load the bird and leave us fly away."

"Yeah, Blinky and I remember the time you played loadmaster and supervised the loading at Fort Good," Sam interjected. "It's a good thing Ty Downs wasn't so sick he couldn't read the form F."

"Yeah? All he got me was a crew delay so we could load the aircraft the way *he* wanted it."

"Boss," Long Suffering Sam shook his head. "A 62 percent of M.A.C. isn't exactly, uh, shall we say, standard?"

"I could have handled it," the World's Finest boasted. "My length and breadth of esoteric experience allows me to perform superhuman . . ." His words faded as his two flying companions glared at him. It had only been

one week since his long suffering copilot had taken the aircraft away from C.R. on climbout.

The Starlifter was passing 95 degrees of bank between cloud decks. "Damned instruments," the Ambient Aeronaut had muttered as Sammy assumed control and righted the craft.

C.R. sulked a second and said, "Well, there's one thing you can't deny: command and control has such a death grip on the aircraft commander that he won't do a thing without consulting 'mother.' It used to be, they gave you an airplane and a mission and you hacked it. No questions asked."

He extracted an Egyptian Oval from his sterling silver cigarette case and inserted it into his ebony holder. The Rotund One flicked his lighter and inhaled deeply. "I remember," he said as he stared at the series of smoke rings he'd engineered, "one time I was flying a 118 over Europe when I ran out of cigarettes. And the only place that carried my brand was the Smoke Shoppe in the Torrejon BX. I diverted to Madrid and picked up a carton. Nobody said word one to me. Now that's how you *use* command authority."

"Sounds more like *abuse* to me," Blinky shook his head in wonderment. "Didn't you waste a lot of time and fuel? What about the passengers you had on board—don't you think you inconvenienced them? And don't you think that your audacious acts actually brought about some of that very overcontrol you complain about?"

"Yeah, but. Well, maybe," the Devious Driver said defensively. "I just don't understand how come all the regs tell me what I can't do. They're only aimed at hacking the mission at any cost."

"C'mon, Boss," Sammy reminded, "you were telling us about some of the 'good times' last Friday night. You said you had your crew on a 'Deep Threat' some years ago—in Ramstein—you were number 22 in the stage with no inbounds and they wouldn't release you. Right?"

C.R. nodded.

"And now they can't do that anymore—according to the very regs you demean."

"You also told us horror stories about pounding the ramp for 13 hours," Blinky took his turn. "And then flying out your crew duty day plus extensions. The command post can't do that anymore."

"And you said that many times your crew was alerted for a bird that wasn't in commission—and no parts were even on station to fix it," Sammy shook his head. "That doesn't sound like 'the good ol' days' to me."

"Balderdash!" the Bold One blurted. "What do you young whippersnappers know! I'm telling you that I'd much rather be back there amongst the popping and cracking 4360's, the cheap booze and those long-legged women. And—"

"Excuse me, Boss," Blinky interrupted. "Speaking of women—check six, Tassels approacheth."

"Hi, Cuddly Bear," She leaned down and kissed C.R. on his balding brow. "What's all this tirade about?"

Sam and Blinky wore smug smiles as the Asthmatic Aviator coughed and wheezed. "Ahem, we were, ah, just discussing the, er, progress of the airlift business over the past years. (Cough.)"

"You'd better let me take you back to my apartment and doctor that cold," she took C.R.'s hand. "I've got just the treatment for you."

C.R. smiled faintly at Sam and Blinky as he stood, "Like I said, life is great in '78." Tassels and the Rotund One faded into the dim lights of the O'Club.

"The miracles of modern medicine," Sam remarked.

"Right," Blinky slurred. And they both laughed.

Quick Stoppers

Final Connection

A little help from your friends with the technical knowledge can save you a lot of trouble—sometimes. The *USAF Safety Officers' Study Kit* tells this story about a commercial cargoliner crash. The Douglas multijet developed a gear problem on approach to Salt Lake City so the crew entered holding at 6,000 feet at the local VOR to troubleshoot the system. They switched frequencies to contact company maintenance for some advice. While they were diagnosing the problem the aircraft drifted out of the holding pattern. The air traffic controller noticed the excursion and transmitted a warning on guard and VOR voice. When the crew switched back to ATC frequency, they were instructed to climb immediately. In a few seconds radar contact was lost; the aircraft struck a mountain, killing the crew.

Airborne phone patches are great when you're trying to solve a sticky technical problem — as long as *somebody flies the airplane.*

Right Wire, Wrong Pole

Turning on the cockpit instrument lights when it gets dark is a pretty common action and the results are usually predictable. Recently, a Huey pilot found that turning up the lights can be pretty exciting.

While cruising at 500 feet AGL, the right-seater turned up a light rheostat. There was a loud bang, the chopper yawed to the right, and the Pratt & Whitney turbo-shafts let out a whine that signaled runaway rpm. The pilot regained directional control and rolled both throttles back to flight idle. He figured that the UH-1N had dual automatic fuel control failure to the high side; the copilot confirmed that both manual-fuel caution lights were on. The engine governor switches were placed in "manual" and the pilot landed the Huey back at home station.

Investigation showed that a TCTO had recently been finished on the aircraft's electrical system. A check of the wiring revealed a ground wire connected to the wrong terminal, which resulted in the fuel control solenoids going to the manual position when the pedestal light rheostat was turned on.

A quick check of the other helicopters on station found two more with the same problem. Sabotage? Nope—just an unclear tech order and a liberal application of Murphy's Law: If there's a way to install something wrong, somebody will.

A Huey's Sad Tail

During a demonstration of a 180-degree autorotation, the TH-1F instructor pilot held the flare a bit too long. Before he could rotate the aircraft to the landing attitude, the tail skid hit the ground and the Huey pitched forward slightly. The IP established a hover, then landed to check for tail skid damage. He didn't see any, so he hover-taxied to the parking area and shut down.

Once the rotors were stopped, it was obvious that more than just the tail skid had hit the ground; the tips of the tail rotor blades were scratched. Investigators recommended the following changes to the Dash One: a warning that the tail rotor can strike the ground during a normal autorotative flare and a requirement to shut down and inspect the aircraft if there's a possibility of a tail rotor strike.

Say Altitude

If you think that missing a mandatory altitude call to ATC is no big deal, here's an incident that might change your mind. A C-141 and a C-130 were inbound to the same overseas base. The Herk crossed XYZ vortac at FL 250; the Starlifter was three minutes behind at FL 290. Both aircraft had been cleared to destination via the same route.

Two minutes before the 141 reached XYZ, Center transmitted a further clearance with an incorrect altitude assignment of FL 250. The MAC crew left FL 290, *but didn't report doing so.* Then, as they passed XYZ, they made the required position report, *but omitted the altitude.* The center controller didn't question the omission, and it wasn't until approach control took over that the Starlifter crew found out they were sharing airspace with the 130. By that time, they'd already passed abeam the propjet; the startled Hercules crew filed a Hazardous Air Traffic Report.

Gas Pains

The Galaxy pulled up behind the airborne gas station to practice air refueling. No real need for petrol though, so they only took on two thousand pounds of JP-4. Four of the six connections were dry. After about five minutes in the contact position the pilot called for disconnect and the C-5 moved away from the tanker. The crew heard a couple of loud thumps as they came off the boom. In a few seconds they noticed fuel fumes, put on oxygen masks, and started the emergency procedures. The problem was soon identified—fuel seeping into the cockpit from behind the DC circuit breaker panel. More JP-4 was discovered dripping into the forward bunk room and leaking into the cargo compartment.

A fitting was fouled up in the refueling manifold and had caused the leak. With the fuel-air mixture in the cavernous cargo carrier approaching combustible proportions, the crew declared an emergency and landed the C-5.

QS

Tired Story

Here's an altimetry tale with a new twist. After an all-night training flight the Lockheed turboprop climbed out toward FL 230. The flight mechanic was troubleshooting a minor malfunction, the AC was talking on the HF radio, and the copilot was trying to get an ATC clearance for the return to home. The pilot started to feel funny—something just wasn't right—so he checked around the cockpit and spotted the cabin-pressure light glowing in the semidarkness. He asked the flight mech about the cabin altitude and got a nonchalant reply, "Below 10,000." The copilot said the cabin altimeter read 7,000 feet. The pilot still didn't feel right so he leaned over and checked it for himself. The cabin altimeter read 17,000 feet! He ordered everybody on oxygen and started an emergency descent.

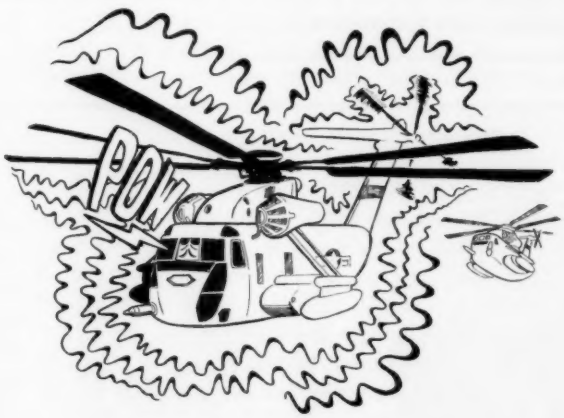
The investigators said fatigue was a major cause of this incident. The aircrew was really tired and hadn't paid attention to details like completing the climb checklist or checking the cabin differential pressure. Fortunately, the pilot wouldn't rest until he had found what was wrong.

—Adapted from USN *Weekly Summary*

Phantom Phlash

We normally associate lightning strikes with nasty weather, like thunderstorms. However, an HH-53 recently demonstrated that there's more than one way to get zapped. Two Super Jollies on a cross-country flight were being shepherded by an HC-130. The choppers cruised between cloud layers in light precipitation and the Herk followed above and behind watching them on radar. The crew of the lead 53 saw a bright flash on the pilot's (right) windshield. The outer layer of the window delaminated and cracked from the center to the edges. The pilots in the second HH-53 reported seeing a cloud of mist form around the lead helicopter at the moment their radio crackled as it does near a thunderstorm. There weren't any cumulus clouds visible in the area and the Kingbird wasn't painting any on radar. The helicopters swapped positions, descended below the clouds and landed.

Experts decided that atmospheric conditions were right for the Jolly Green to become a large static electricity generator, and the force had discharged on the windscreen.



Notable Quote

Your arrival should be merely the finish of journey, and not the end of everything.

—*Flight Safety Bulletin*
from *Air Sense*, 1933

After Deadline

INVESTIGATORS ARE FINISHED sifting through the wreckage of the two airlifters that crashed recently. Though the reports aren't ready, there's an initial indication that we ought to take a hard look at crew coordination and discipline. Look for more in future issues.

SAFETY OFFICERS--The latest editions of two safety regs are AFR 127-4, Investigating and Reporting US Air Force Mishaps, 16 Jan 78, and MACR 900-3, Safety Award Program, 20 Mar 78. If you don't have these in your library, check with your publications distribution person.

MAC STAN/EVAL NEEDS YOUR HELP to see that the MAC Aircrew Newsletter addresses issues of vital interest to aircrews. The MacZaminers recently took over publication of the Newsletter and need ideas and articles that interest you. Write HQ MAC/DOV, Scott AFB, IL 62225.

WEATHER FORECASTERS ARE NOW SERVING in 13 of the 20 CONUS ARTCC's. The met-men are there to help the ATC controllers get and use weather information to provide better service to aviators.

NEXT MONTH--The 1978 MAC Flying Safety Writing Contest winners will be announced in the July issue of The MAC Flyer. We'll feature the first-place contest story, an article for part-time navigators, and some magic for hover lovers. And "The Sage Brush"--reluctantly excluded from this issue--will be back.

1977 MAC AIRCRAFT MISHAP STATISTICS
(Rates are per 100,000 flying hours.)

		Class A		Class B			
Acft	Hours	Nbr	Rate	Nbr	Rate	Acft Destroyed	Fatalities
C-5	49,186	0	0.00	3	6.10	0	0
C-6	374	0	0.00	0	0.00	0	0
C-9	28,908	0	0.00	0	0.00	0	0
C-12	1,176	0	0.00	0	0.00	0	0
C-130	192,780	1	0.52	6	3.11	0	1
C-131	565	0	0.00	0	0.00	0	0
C-135	7,081	0	0.00	1	14.12	0	0
C-137	1,712	0	0.00	0	0.00	0	0
C-140	4,471	0	0.00	0	0.00	0	0
C-141	297,963	2	0.67	4	1.34	0	0
CT-39	101,792	0	0.00	2	1.96	0	0
H-1	35,884	0	0.00	1	2.79	0	0
H-3	15,475	1	6.46	1	6.46	0	0
H-53	9,415	2	21.24	3	31.86	1	1

☆U.S. GOVERNMENT PRINTING OFFICE: 1978-765-097/2

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